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OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER LIN, JAMES	
			ART UNIT 1762	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/077,029	Applicant(s) KIMURA ET AL.	
	Examiner Jimmy Lin	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 101-105, 107-120 and 123 is/are pending in the application.
- 4a) Of the above claim(s) 116-120 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 101-105, 107-115 and 123 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/14/2007 has been entered.

Priority

2. A certified translation filed 6/14/2007 has been received for the priority document 8-248087. However, the foreign priority document does not fully support the claims. For example:

Claims 101-104: The foreign priority document does provide a general teaching of enhancing a liquid repellency at a surface of the solid insulating layer, but only provides a more specific teaching of using an amorphous silicon layer as a water-repellant layer to thereby form a distribution of water repellency and hydrophilicity [0133]. Additionally, the foreign priority does not have support for the specific teachings of enhancing the liquid repellency either before or after patterning of the insulating layer. Also, there is no support for using ultraviolet ray or plasma irradiation to enhance the repellency.

Claims 105,107-115: The foreign priority document does not support enhancing either the lyophilicity or the wettability of the first electrode, or any sort of enhancing of the first electrode for that matter. Also, there is no support for the general enhancing of lyophilicity or wettability at a predetermined position because there is only support for providing an electric potential through the scanning lines, signal lines, and common lines to form opposite electric charges at the predetermined position and the peripheral regions of the predetermined position [0141]-[0149].

Claims 112,123: The foreign priority document does not provide any teaching of the repellency of the side-wall of the insulating layer relative to the upper surface of the insulating layer. In fact, there is no mention of anything about the side-wall of the insulating layer.

Specification

3. The substitute specification filed 6/14/2007 has not been entered because it does not conform to 37 CFR 1.125(b) and (c) because: the wording of “lyophilicity” in the original specification filed 5/18/1998 has been changed to “wettability”. There is no indication in the original specification as filed that the Applicant had intended to define “lyophilicity” as or to have the same meaning as “wettability”. According to dictionary.com, the two words have very different definitions and, thus, they cannot be used interchangeably. The Applicant is advised to find and submit a definition from a reliable source that lyophilicity can have a definition that is useable with the claim language. This definition can then be used as the interpretation of lyophilicity.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 110 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 110 recites “the lyophilicity being enhanced with respect to a liquid solution” (lines 8-9 of claim) and “arranging a liquid solution on the first electrode” (line 10 of claim). It is indefinite if “a liquid” in both recitations refer to the same liquid.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 105 and 107-115 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the

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relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support for changing the term “lyophilicity” to “wettability” (claims 105, 107-115) because the terms have different definitions. The specification as originally filed does not define lyophilicity as including the interpretation of wettability. Thus, amending the claims as such would change the scope of the claims.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claim 113 rejected under 35 U.S.C. 102(e) as being anticipated by Roitman (U.S. Patent 5,972,419).

Roitman discloses a method of making an EL device (abstract). The EL device has a first electrode 104, second electrode 102, and an organic semiconductor film 108 therebetween (Fig. 1). The EL material is dispensed with a solvent (col. 3, lines 3-7) and the solvent is evaporated after deposition (col. 3, line 51). The surface on which the EL material droplets are deposited can be arranged in a plurality of hydrophilic or hydrophobic regions so that the droplets are confined by surface tension (col. 4, lines 56-59). Whether the wettability of the first electrode 101 is enhanced or an additional layer having a hydrophobic or hydrophilic property is deposited onto the first electrode, the teachings of Roitman meet the limitations of the claim. In the case that an additional layer is added, such layer is still enhancing the wettability at the predetermined position because the affinity for the EL material droplets at the predetermined position is enhanced after the layer is added.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 113-114 are rejected under 35 U.S.C. 103(a) as being obvious over Roitman '419 in view of Okibayashi et al. (U.S. Patent No. 5,589,732).

Roitman is discussed above, but does not explicitly teach that the lyophilicity is enhanced by ultraviolet ray irradiation.

Okibayashi teaches a method of making an EL device, wherein a resin layer is exposed to ultraviolet radiation to change the affinity of the layer. The affinity of the layer is changed from hydrophilic to lipophilic (i.e., hydrophobic) (col. 4, lines 8-14). Roitman exemplifies xylene as a suitable solvent (col. 3, lines 1-10). Xylene is a hydrophobic liquid and would have a strong affinity for a resin layer that has been made hydrophobic. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a resin layer and to have exposed the layer to ultraviolet radiation in order to confine the EL material droplets of Roitman with a reasonable expectation of success because Okibayashi teaches that such a resin layer is operable for use in EL devices and that such exposure can make the layer hydrophobic. The selection of something based on its known suitability for its intended use has been held to

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support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

13. Claims 113 and 115 are rejected under 35 U.S.C. 103(a) as being obvious over Roitman '419 in view of Tada (U.S. Patent No. 5,616,427) and Cozzette et al. (U.S. Patent No. 5,554,339).

Roitman is discussed above, but does not explicitly teach that the lyophilicity is enhanced by plasma irradiation.

Tada teaches a method of making an EL device (abstract), wherein a polyimide interfacial layer 13 can be formed between the first electrode 12 and the EL layer 14,15 (col. 5, lines 6-11). Cozzette teaches that polyimide can be made hydrophobic via a fluorocarbon plasma treatment (col. 35, line 66-col. 36, line 4). Roitman exemplifies xylene as a suitable solvent (col. 3, lines 1-10). Xylene is a hydrophobic liquid and would have a strong affinity for a polyimide layer that has been made hydrophobic. In light of these teachings, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed a polyimide layer and to have exposed the polyimide to a fluorocarbon plasma treatment with the expectation of forming a hydrophobic region at the predetermined area of Roitman in order to confine the EL material droplets by surface tension.

14. Claims 101-104 and 123 are rejected under 35 U.S.C. 103(a) as being obvious over Roitman '419 in view of Hasegawa et al. (JP 09-230129).

Roitman discloses a method of making an EL device (abstract). Pixel electrode 132 is formed on a substrate and a solid insulating layer 131 is formed on the electrode. EL material is deposited in the wells formed between the insulating layers (col. 3, lines 29-50). The insulating layer can be left in place (col. 4, lines 1-2). The purpose of the insulating layer is to confine the droplets of EL material, preventing them from mixing.

Roitman does not explicitly teach enhancing a liquid repellency at a surface of the insulating layer. However, Hasegawa teaches a method of making a display device wherein insulating layer 2 is used to separate the colored layers 6 (Fig. 1). The insulating layer can be irradiated with UV rays in order to enhance the repellency of the ink and prevent the colors from

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mixing(abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used the insulating material of Hasewaga in the method of making the EL device of Roitman and to have enhanced the repellency of the insulating layer via UV irradiation with a reasonable expectation of success. One would have been motivated to do so in order to have further confined the EL material droplets of Roitman.

Roitman and Hasegawa do not explicitly teach the order of patterning the insulating layer and enhancing the liquid repellency of the insulating layer. However, one of ordinary skill in the art would have expected similar results in performing the patterning of the insulating before or after enhancing the liquid repellency. The selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See, for instance, *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have performed the patterning step *prior* to the enhancing step or to have performed the patterning step *after* the enhancing step with an expectation of similar results and with a reasonable expectation of success because one of ordinary skill would not have anticipated any new or unexpected results.

Claim 123: Roitman does not explicitly teach that the repellency of the side-wall of the insulating layer is lower than the liquid repellency of the upper surface of the insulating layer. However, in the case that the UV exposure is performed prior to patterning of the substrate, the repellency of the side-wall would necessarily be lower relative to the upper surface.

15. Claims 105, 107, and 108-111 are rejected under 35 U.S.C. 103(a) as being obvious over Roitman '419 in view of Ohno et al. (U.S. Patent No. 5,705,302).

Roitman is discussed above, but does not explicitly teach a difference of wettability between the first electrode and the insulating layer. However, Roitman teaches in a first embodiment that insulation layers can be formed on the substrate to confine the droplets, and teaches in a second embodiment that hydrophilic and hydrophobic regions can be formed on the substrate in order to confine the droplets. Using both embodiments together would have further ensured the confinement of the droplets and, thus, would have been an obvious modification. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used insulating layers while at the same time forming hydrophilic and hydrophobic

regions on the substrate of Roitman with a reasonable expectation of success. One would have been motivated to do so in order to have further ensured the confinement of the droplets. In light of these teachings, one of ordinary skill in the art would have made the first electrode more wettable towards the liquid droplets while making the insulating layers more repellent.

Roitman does not explicitly teach that the wettability of the first electrode is enhanced. However, Ohno teaches that conductive layers such as those made of indium tin oxide (ITO) can be made hydrophobic with treatments such as RF plasma and UV light irradiation (col. 9, lines 13-25). The enhanced hydrophobicity of the ITO film would be more wettable towards the hydrophobic xylene solvent of Roitman. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have enhanced the hydrophobicity of the first electrode of Roitman (Roitman exemplifies ITO as a suitable first electrode material, see col. 2, lines 40-42) with a reasonable expectation of success because Roitman made the suggestion of having hydrophobic and hydrophilic regions in order to confine the droplets and because Ohno teaches that ITO films can be treated to enhance hydrophobicity. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Claim 107: Roitman teaches that the insulating layer covers at least a part of the first electrode (Fig. 2).

Claim 109: Roitman teaches that the liquid solution is deposited by an ink jet method.

Claim 111: In light of the teachings of Roitman, one of ordinary skill in the art would have made the insulating layer hydrophilic while enhancing the hydrophobicity of the first electrode according to the method of Ohno.

Claim 108: Roitman does not explicitly teach that forming an interlayer film on the insulating layer, wherein the interlayer film is repellent to the liquid solution compared to the first electrode. However, any method of making the region of the insulating layer to be hydrophilic would have been operable. Forming a hydrophilic film onto the insulating layer would have been an operable method and would have been well within the knowledge of one of ordinary skill. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed a hydrophilic film onto the insulating layer of Roitman with a

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reasonable expectation of success. One would have been motivated to do so to have made a hydrophilic region.

16. Claim 112 is rejected under 35 U.S.C. 103(a) as being obvious over Roitman '419 in view of Ohno '302 as discussed above for claim 111, and further in view of Hasegawa '129.

Roitman is discussed above, but does not explicitly teach that the repellency of the side-wall of the insulating layer is lower than that of the upper surface of the insulating layer. However, such is obvious for substantially the same reasons as discussed in claim 123.

Double Patenting

17. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

18. Claims 101-104 and 123 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 7 of U.S. Patent No. 6,755,983 in view of Roitman '419. The claims of '983 do not require that the method is to manufacture an electroluminescent device or that pixel electrodes are formed. However, Roitman teaches that the formation and treatment of the insulating layers (i.e., the banks as claimed in '983) can be applied to an electroluminescent display. Therefore, it would have been obvious to one of

ordinary skill in the art at the time of invention to have applied the invention of '983 to an electroluminescent device because Roitman teaches that such methods of confining the deposition solution is advantageous in the application of electroluminescent devices.

'983 does not require a specific order of performing the patterning and the enhancing steps. However, one of ordinary skill in the art would have expected similar results in performing the patterning of the insulating before or after enhancing the liquid repellency. The selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See, for instance, *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have performed the patterning step prior to the enhancing step or to have performed the patterning step after the enhancing step with an expectation of similar results and with a reasonable expectation of success because one of ordinary skill would not have anticipated any new or unexpected results.

19. Claims 113-115 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 7 of U.S. Patent No. 6,755,983 in view of Roitman '419, Okibayashi '732, Tada '427, and Cozzette '339 for substantially the same reasons as discussed in the 35 U.S.C. 103(a) rejection.

20. Claims 105, 107, and 108-112 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 7 of U.S. Patent No. 6,755,983 in view of Roitman '419, Ohno '302, and Hasegawa '129 for substantially the same reasons as discussed in the 35 U.S.C. 103(a) rejection.

Response to Arguments

21. Applicant's arguments filed 6/14/2007 have been fully considered but they are not persuasive.

The Applicant argues on pg. 10 that the present application claims priority to JP 8-248087, filed on September 19, 1996 while Roitman only has a filing date of June 13, 1997, so Roitman does not qualify under prior art due to the earlier priority date of the present application.

However, the '087 priority document does not fully support the claims. See above discussion for details. Thus, the claims do not receive the benefit of the earlier priority date.

The Applicant argues on pg. 11 that Roitman and Hasegawa does not teach or suggest “patterning the insulating layer so as to expose the part of the pixel electrodes after enhancing the liquid repellency at the surface of the insulating layer” and “enhancing a liquid repellency at the surface of the insulating layer after patterning the insulating layer”. However, the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See, for instance, *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). One of ordinary skill in the art would have performed the exposure step and the enhancing step in any order with the expectation of similar results and, thus, performing the steps in any order would have been obvious.


The Applicant argues on pg. 11 that Roitman does not teach or suggest “enhancing a liquid repellency” and thus cannot teach or suggest patterning an insulating layer after the liquid repellency has been enhanced. However, Roitman does teach that providing hydrophilic regions and hydrophobic regions on the substrate is an operable method of confining the liquid solution. Hasegawa and Ohno teaches the operability of enhancing the hydrophilicity and hydrophobicity, as discussed above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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